

## **REMARKS**

Entry of the foregoing, reexamination and further and favorable reconsideration of the subject application in light of the following remarks, pursuant to and consistent with 37 C.F.R. § 1.112, are respectfully requested.

### **I. Amendments to the Claims**

By the foregoing amendments to the claims, claims 17 and 18 have been amended. In particular, claim 17 has been amended to recite that the polypeptide comprises SEQ ID NO: 2, and to clarify that the inhibition of biotin biosynthesis induces plant growth inhibition. Support for the correlation between inhibition of biotin biosynthesis and inhibition of plant growth can be found at least at page 3, lines 12-23 of the present specification. Claim 18 has been amended by deleting the phrase "wherein the antisense polynucleotide is complementary to an isolated polynucleotide encoding a polypeptide."

The amendments to the claims have been made without prejudice or disclaimer to any subject matter recited or canceled herein. Applicants reserve the right to file one or more continuation and/or divisional applications directed to any canceled subject matter. No new matter has been added, and entry of the foregoing amendments of the above-identified application are respectfully requested.

### **II. Response to Claim Rejections Under 35 U.S.C. §§ 112/101**

At pages 2-3 of the Office Action, claims 17 and 18 have been rejected under 35 U.S.C. § 112, second paragraph, and under 35 U.S.C. § 101 as purportedly indefinite and failing to recite a proper definition of a process.

Specifically, the Examiner has stated that although claims 17 and 18 provide for a method for inducing plant growth inhibition, the claims do not set forth the active, positive steps delimiting how the method is practiced. The Examiner has also stated that it is not clear whether the phrase "wherein the antisense polynucleotide . . ." in claim 18 modifies only the method of the "introduction of an antisense . . ." or something more.

To expedite prosecution in the present application, and not to acquiesce to the Examiner's rejection, the claims have been amended as described above.

In particular, claim 17 has been amended to clarify that the method comprises the step of suppressing the expression or function of the recited polypeptide. Applicants respectfully submit that the claims as amended sufficiently recite the active, positive step that precisely defines how the inventive method is actually practiced.

With regard to claim 18, the phrase "wherein the antisense polynucleotide . . ." has been canceled from the claim.

Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

### **III. Response to Claim Rejections Under 35 U.S.C. § 101**

At page 3-6 of the Office Action, claims 17 and 18 have been rejected under 35 U.S.C. § 101.

Specifically, the Examiner has contended that claims 17 and 18 are not supported by either a specific and substantial asserted utility or by a well-established utility. This rejection is respectfully traversed.

The present inventors have discovered that suppressing the expression or function of SEQ ID NO: 2 in a plant inhibits biotin biosynthesis, thereby inhibiting plant growth.

Applicants submit that the use of methods for inhibiting plant growth (*e.g.* treating plants with herbicide) is well-established and known in the art. The application also provides at least one specific and substantial utility (inhibiting biotin synthesis in plants, thereby inhibiting the growth of harmful plants; *see, e.g.*, page 3, lines 12-23 of the present specification). Furthermore, a person of ordinary skill in the art would recognize that the biotin auxotrophic mutants produced by the present method can be used in the selection of transgenic plants.

Thus, the claims are supported by at least a specific and substantial asserted utility or by a well-established utility. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

**IV. Response to Claim Rejections Under 35 U.S.C. § 112, First Paragraph - Written Description**

At pages 6-8 of the Office Action, claims 17 and 18 have been rejected under 35 U.S.C. § 112, first paragraph, as purportedly failing to comply with the written description requirement.

The Examiner has acknowledged that the application sufficiently describes SEQ ID NO: 2. However, it is the Examiner's position that the application does not describe all amino acid sequences having at least 70% identity to SEQ ID NO: 2.

To expedite prosecution in the present application, and not to acquiesce to the Examiner's rejection, the claims have been amended as described above. In particular, the claims have amended to recite that the amino acid sequence comprises SEQ ID NO: 2.

Thus, Applicants respectfully request reconsideration and withdrawal of this rejection.

**V. Response to Claim Rejections Under 35 U.S.C. § 112, First Paragraph - Enablement**

At pages 8-10 of the Office Action, claims 17 and 18 have been rejected under 35 U.S.C. § 112, first paragraph, as purportedly lacking enablement.

Similar to the written description rejection (above), the Examiner has stated that the specification enables methods comprising inhibition of SEQ ID NO: 2, but does not enable inhibition of all amino acid sequences having at least 70% identity to SEQ ID NO: 2.

For the reasons set forth above, Applicants respectfully request reconsideration and withdrawal of this rejection.

**VI. Response to Claim Rejections Under 35 U.S.C. § 103(a)**

At pages 11-12 of the Office Action, claims 17 and 18 have been rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Ishige et al. (U.S. Patent No. 6,337,430; "Reference 1") in view of Bevan et al. (UniProt\_8.4 Database, 2000, Accession No. Q9LZ63; "Reference 2") and Allen (U.S. Patent Publication No. 2001/0039042; "Reference 3"). This rejection is respectfully traversed.

The present application relates to KAPA synthase, which is involved in biotin synthesis in plants, and further reveals the function of the gene encoding KAPA synthase for the first time.

The cited references disclose a promoter, 8-amino-7-oxononanoate synthase-like protein and some of plant biotin synthase. However, the cited references, taken alone or in combination, do not teach or suggest the function of plant KAPA synthase. Reference 2, in particular, merely discloses 8-amino-7-oxononanoate synthase-like protein.

8-amino-7-oxononanoate synthase gene is also known as bioF gene in *E. coli* and some of bacterial 8-amino-7-oxononanoate synthase is known. However, bacterial 8-amino-

7-oxononanoate synthase has low identity to that of plant (below 40%) and plant 8-amino-7-oxononanoate synthase had not been isolated until the present inventor's effort.

Also, Reference 3 discloses that "the biotin biosynthetic pathway in plant cell has been elucidated biochemically (Baldet (1993) Eur J Biochem 217:479-485) and genetically (Patton et al. (1998) Plant Physiol 116:935-946). This pathway is very similar to bacterial pathway" (*see* [0005] paragraph of Reference 3). However, Patton et al. merely discloses the bio1 mutant and bio2 mutant, which are complementary to bioA and bioB in *E. coli* (*see* Figure 1 of Patton et al.). Patton et al. does not disclose any of plant 8-amino-7-oxononanoate synthase. Therefore Reference 3 does not teach or suggest the role of 8-amino-7-oxononanoate synthase in the plant biotin synthetic pathway.

Thus, the references cited by the Examiner do not teach or suggest the subject matter of the present claims, and Applicants respectfully request reconsideration and withdrawal of this rejection.

**VII. Conclusion**

In view of the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order. Such action is earnestly solicited.

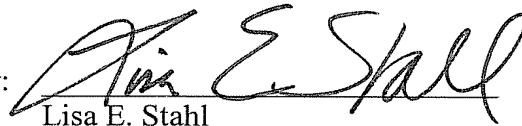
In the event that there are any questions relating to this Amendment and Reply, or the application in general, it would be appreciated if the Examiner would telephone the undersigned attorney concerning such questions so that the prosecution of this application may be expedited.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: September 22, 2008

By:

A handwritten signature in black ink, appearing to read "Lisa E. Stahl", written over a horizontal line.

Lisa E. Stahl

Registration No. 56,704

**Customer Number 21839**

P.O. Box 1404

Alexandria, VA 22313-1404

703 836 6620